

ORIGINAL

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

RECEIVED

FEB 28 1996

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matter of)
)
Revision of the Commission's Rules)
To Ensure Compatibility With Enhanced)
911 Emergency Calling Systems)

CC Docket No. 94-102

To: The Commission

DOCKET FILE COPY ORIGINAL

ADDITIONAL COMMENTS

Dennis C. Brown and Robert H. Schwaninger, Jr. ("Brown and Schwaninger" or "we"), on behalf of numerous clients that operate Specialized Mobile Radio Service systems and two-way private carrier and Commercial Mobile Radio Service systems, hereby file our Additional Comments in the above-captioned proceeding. In support of our position, we show the following.

The Commission has requested additional comments on an *ex parte* presentation titled "Public Safety-Wireless Industry Consensus: Wireless Compatibility Issues, CC Docket No. 94-102".¹ We have no objection to PSW's position, so far as it concerns the interests of the parties that made the presentation. However, the Commission needs to know that the interests, capabilities, and resources of other elements of the telecommunications industry are not entirely the same as those of PSW. While the parties joining in PSW characterize Cellular Telecommunications Industry Association as the "Wireless Industry", we call to the

¹ For convenience, we shall refer to the parties which jointly made the *ex parte* presentation as "PSW", for "Public Safety-Wireless".

No. of Copies rec'd
List ABCDE

011

Commission's attention — with all due respect to CTIA — that the cellular industry does not constitute the entire scope of the wireless telecommunications industry. Accordingly, while the Commission might well find that the suggestions made by the PSW presentation are appropriate when applied to the services provided by the Cellular and Personal Communications Service (PCS) industries, not all of the suggestions are necessarily appropriate to the services provided by other, and, in particular, smaller operators.

We begin by indicating those areas where we expect that most SMR operators and other private carriers and two-way Commercial Mobile Radio Service operators would agree with PSW.

- * We agree with PSW on the suggestions made under the heading of “Financial and legal liability”.

- * We agree with PSW that 9-1-1 access should be available to speech- and hearing-impaired individuals through a means other than voice-only mobile radio handsets, such as text telephone devices.

- * We agree with PSW that a caller should have the ability to reach emergency services from any service initialized mobile radio handset in a home service area or a subscribed-to roamed service area by dialing only 911, provided that the mobile service is interconnected with the public switched telephone network (PSTN).

While there are areas of likely agreement where situations and burdens are similar, there are distinct technical differences between the operation of a cellular system and the operation of

other mobile radio systems. A cellular system necessarily implies the use of multiple sites, associated with a complex and costly switching system. In contrast, other mobile radio systems are based on a different design philosophy, specifically, many mobile radio systems operate from a single base station location and do not include an elaborate or flexible telephone switching system for interfacing with the PSTN.

There are basically two means by which the location of a user can be determined by a mobile radio system. Trilateration or triangulation can be used, but only if at least three fixed antenna locations are employed. If the mobile unit is able to obtain a "fix" on its location via an external system, for example, by the use of a Global Positioning System (GPS) receiver, then the mobile radio system can interrogate that receiver and obtain the user's approximate location.

Because a cellular system has multiple base stations, it would not be unduly costly for many cellular operators to add a function to their systems that would determine a user's location by trilateration or triangulation among three cellular base station locations. However, from a single location, it is possible to do no more than determine a one-dimensional location, that is, it is not possible to do more than determine approximately how far away the mobile unit is. It is not possible to determine the bearing to the user without replacing all mobile units and adding base station equipment. To determine a mobile unit's location by triangulation or trilateration, each non-cellular wireless system operator, such as the operator of a Specialized Mobile Radio System, would have to construct and operate at least three times as many antenna sites as it currently employs and pay the cost of routing the information to the carrier's central location

from all of those locations, solely to ascertain the user's approximate location, with no other benefit to the end user.

It would not be reasonable for the Commission to require each non-cellular wireless provider to construct at least two more antenna locations each and to pay the costs of bringing the user location information to a central location, solely to provide information in support of enhanced 9-1-1 service. While improving the reliability of enhanced 9-1-1 service is a laudable goal, the cost of constructing the additional facilities necessary to determine mobile unit location by trilateration or triangulation would be unreasonably high for any carrier that would have to construct at least two sites in addition to its primary site.

Even with three towers, there is no practicable means of locating a user in terms of elevation. Triangulation or trilateration can fix a position in two dimensional space (for example, latitude and longitude), but unless at least one of the three fixed locations is at a considerable difference in elevation from the other two fixed locations, the elevation of the target unit cannot be determined.

There is no external system for determining the location of a mobile unit which could reasonably be required as an alternative to a carrier's determining location internally. Neither OMEGA, nor LORAN-C, nor GPS is either sufficiently accurate or sufficiently reliable in an urban environment to serve as a useful guide to public safety personnel in locating a user. The Global Positioning System requires that the receiver be able to see at least three satellites if it

is to determine location, but GPS units are not able to receive signals from the satellites indoors, or when buildings block the receiver's view of the satellites. Further, GPS units are bulkier and heavier than many portable radios in an increasingly portable marketplace, and the cost of a GPS receiver is approximately equal to the cost of a non-cellular portable radio transceiver. While the Commission could require every mobile unit user to strap a GPS receiver to his or her back to increase the chances of the user's being found in the event that the user called 9-1-1, we don't think that very many users would find such a requirement to be a suitable alternative to their merely recognizing that when they call 9-1-1, they will need to identify their location to the operator.

The information presented by PSW suggests that the Commission's objective of locating a mobile user in three dimensional space (or even in two dimensional space) with sufficient precision to materially aid an emergency service response cannot be met with currently available technology. (PSW suggests that the objective cannot be met by any terrestrial technique "now envisioned", which is a further step removed from technology which is currently available.) The information presented by PSW indicates that the root mean square error in location in tests was 375 feet. It would appear that the level of precision which can be achieved today is not sufficient to justify the Commission's imposing radiolocation burdens on wireless carriers.

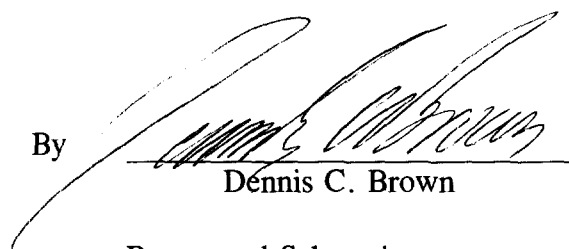
In sum, we have no quarrel with PSW insofar as its Consensus would affect the cellular component of the wireless industry. However, it does not appear that all of the positions taken by PSW can reasonably be applied to other elements of the industry.

Conclusion

For all the foregoing reasons, we respectfully suggest that the PSW Consensus be understood as applicable only to the parties which made the *ex parte* presentation.

Respectfully submitted,

By

A handwritten signature in dark ink, appearing to read "Dennis C. Brown", is written over a horizontal line.

Dennis C. Brown

Brown and Schwaninger
1835 K Street, N.W.
Suite 650
Washington, D.C. 20006
202/223-8837

Dated: February 28, 1996